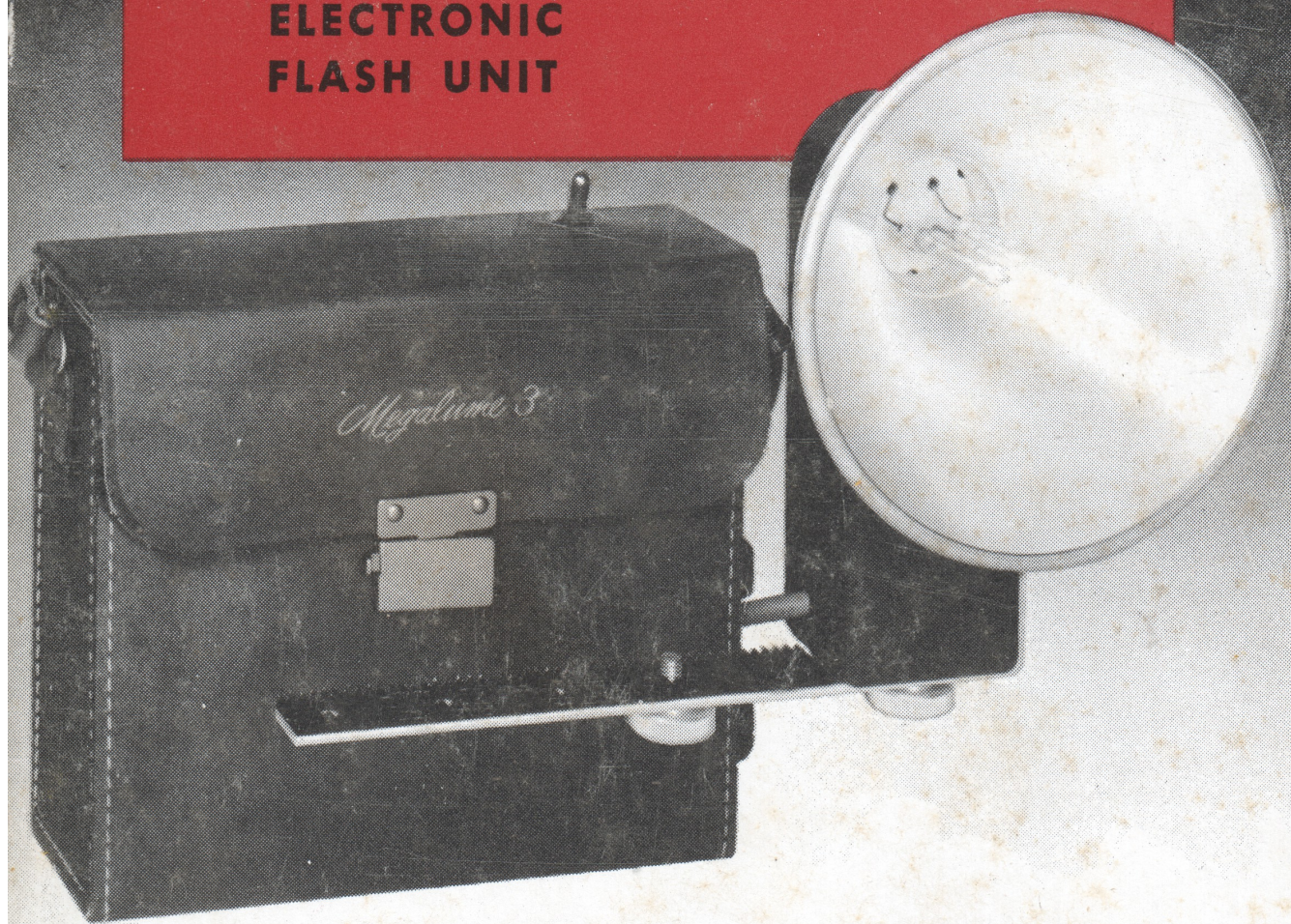


# INSTRUCTION BOOK

for the

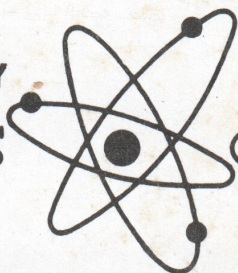
*Megalume 3*®

ELECTRONIC  
FLASH UNIT



MANUFACTURED BY

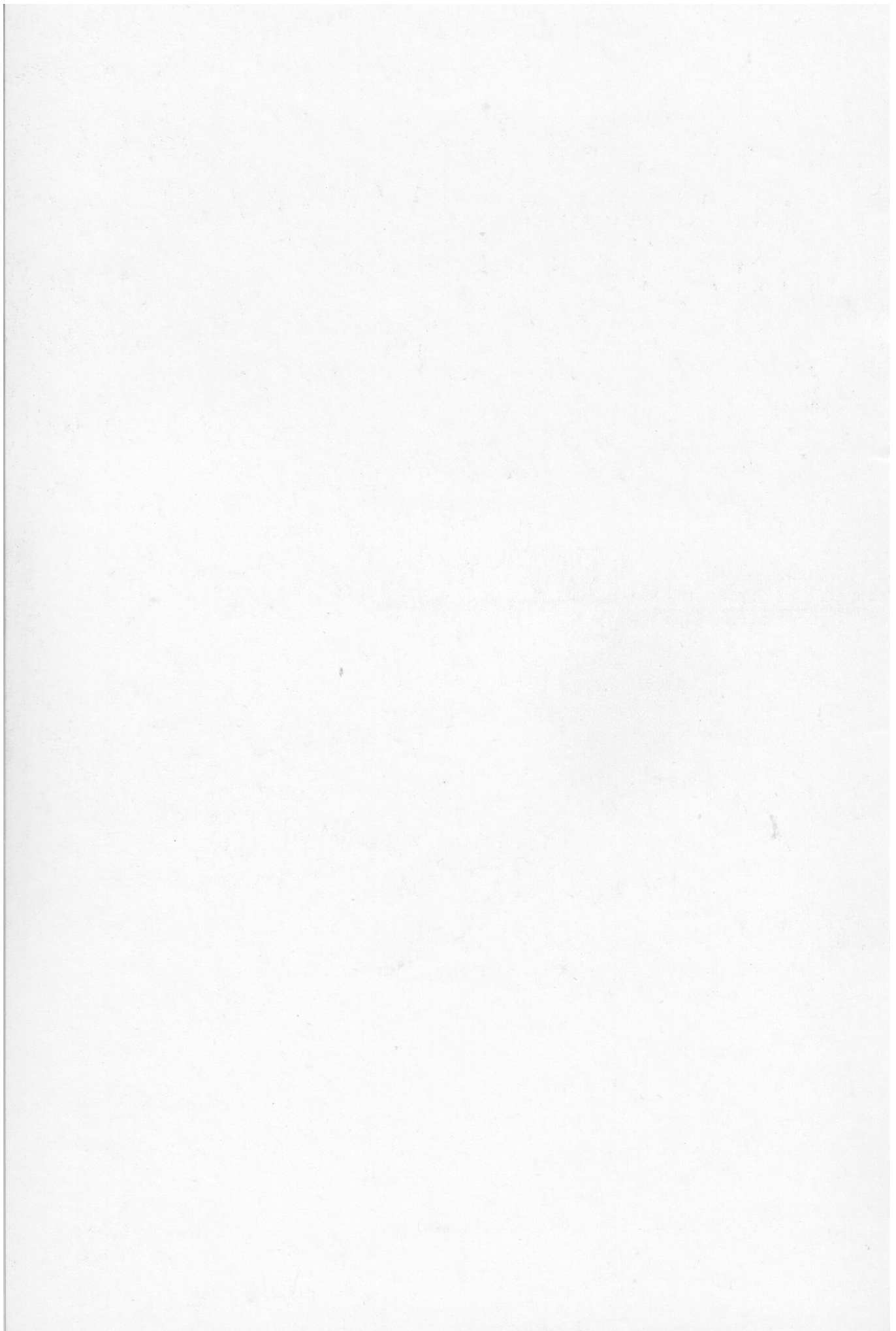
NEMS



CLARKE, INC.

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919 Jesup Blair Drive, Silver Spring, Md.



# INSTRUCTION BOOK

for the

*Megalume 3*®

ELECTRONIC FLASH UNIT

MANUFACTURED BY

**NEMS-CLARKE, INC.**

919 Jesup Blair Drive

Silver Spring, Maryland



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# SPECIFICATIONS

## MEGALUME 3

### EQUIPMENT SUPPLIED

- (1) Power unit with attached Flash Head
- (2) Camera Mounting Bracket with 2 screws
- (3) "D" cell battery container
- (4) Instruction Book

### SHOULDER WEIGHT (less flash head)

- With "D" cells installed..... 4 lbs. 6 oz.  
With High Voltage battery installed..... 5 lbs. 0 oz.

### TOTAL WEIGHT (with flash head)

- Without Battery ..... 4 lbs. 10 oz.  
With "D" cells installed..... 5 lbs. 4 oz.  
With High Voltage battery installed..... 5 lbs. 14 oz.

### OVERALL SIZE

- Height .....  $6\frac{1}{4}$  in.  
Width .....  $6\frac{13}{16}$  in.  
Thickness .....  $2\frac{1}{2}$  in.

### POWER SUPPLY

- (1) 117 volt A.C., 50 to 60 cycles
- (2) 4 type "D" Photoflash Dry Cells
- (3) 1 500 volt Dry Battery

### A-C POWER REQUIREMENTS

- (1) Peak ..... 22 watts
- (2) Stand-by ..... 3 watts or less

### ENERGY STORAGE ..... 50 watt sec.

### RE-CYCLING TIME (within $\frac{1}{2}$ stop of full charge)

- (1) AC operation ..... 20 sec.
- (2) "D" cell operation (new cells) ..... 15 sec.
- (3) 500 volt battery operation (new battery) 5 sec.

### LIGHT OUTPUT (at 0 on meter)

- Beam candle power seconds..... 1400 BCPS  
Effective candle power seconds..... 1300 ECPS  
150 lumen seconds per square foot at 3 feet

1917-1918

MEMORANDUM

TO THE SECRETARY

FROM THE SECRETARY

SUBJECT: [Illegible]

[Illegible text]

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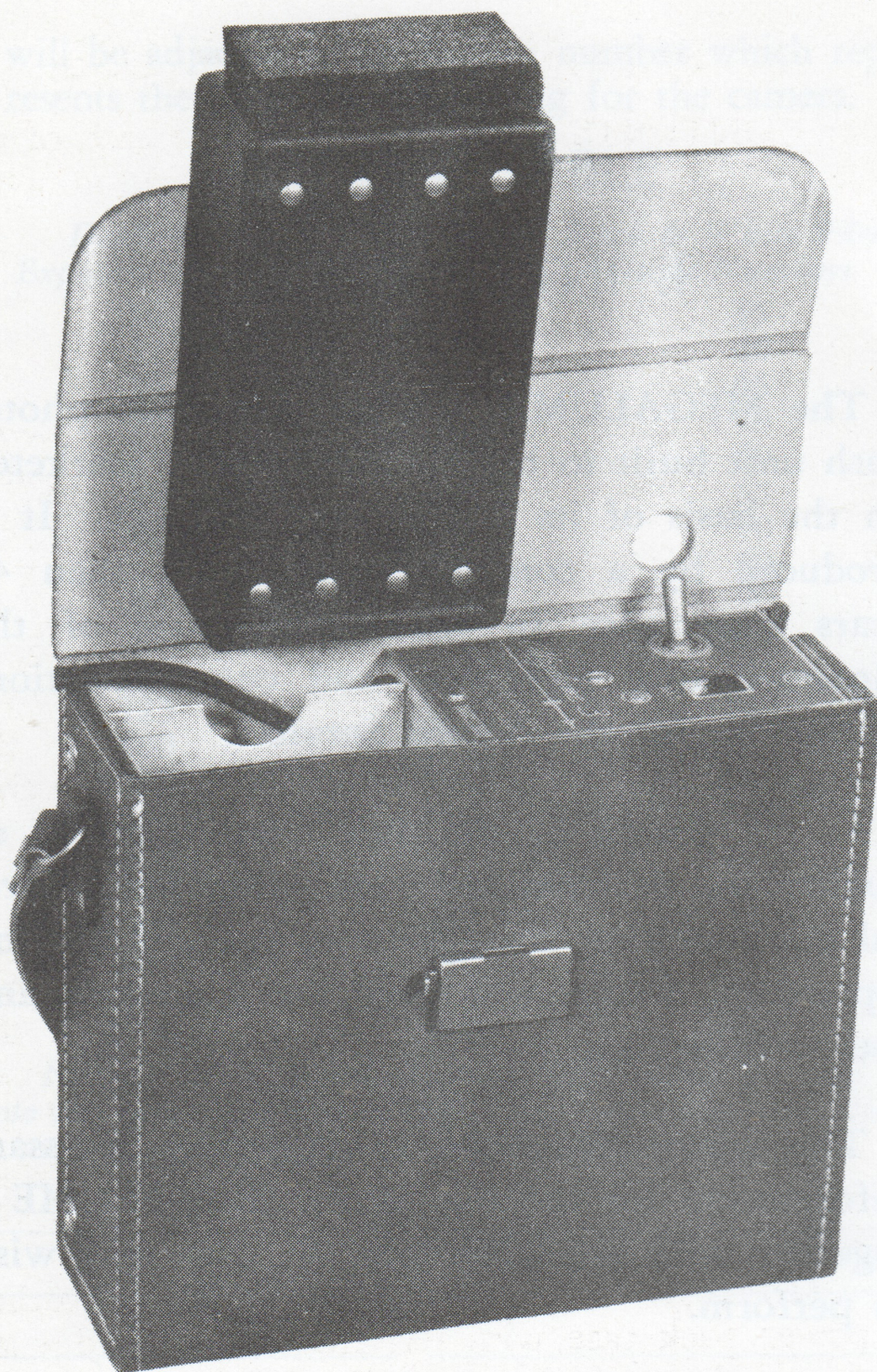
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## I. INTRODUCTION

The MEGALUME 3 is an electronic photo-flash unit built to high standards and marketed on the basis of its engineering features. It is produced by a company with more than 40 years experience in the manufacture of the highest-quality electronic and communications equipment for the Armed Services.

In the design of the unit, considerations of quality and performance were paramount. Careful consideration was given to the engineering aspects of design necessary for long life and user satisfaction.

This instruction book contains the necessary information for the use of the MEGALUME 3 together with servicing that the user may wish to perform.



**Figure 1.—Megalume 3, showing installation of battery case**

## II. PREPARATION FOR USE

1. CONTENTS OF CARTON.—One each of the following items will be found in the carton when it is opened:

Power pack with attached flash head.

D-cell container.

Camera mounting bracket with 2 screws.

2. REFORMING STORAGE CAPACITOR.—All electrolytic capacitors will "deform" while standing idle for any appreciable length of time; hence, in order to conserve battery life, it is imperative that the capacitors be reformed on AC after idle periods of two weeks or more.

This re-forming is accomplished by connecting the unit for AC operation and leaving it on until the meter in the handle of the flash head approaches "0" on the meter scale.

3. BATTERY INSTALLATION.—

(a) "D" cells. Install four "D" type photoflash cells in the battery case, following the pictorial installation diagram inside the case. Install the battery case in the power pack with the closed side of the battery case next to the outside of the leather power pack case, and with the sponge rubber pad at the top. Figure 1 illustrates the proper installation of the battery case.

(b) High Voltage Battery. Install in the leather power pack case with terminals down, and with the (—) terminal toward the inside of the case.

4. CONNECTION TO CAMERA.—A metal bracket is supplied for mechanical attachment of the MEGALUME 3 to the camera. This bracket is de-

signed so that the flash head will be to the left of the camera as viewed from the rear. Secure the screw nearest the flanged end of the bracket into the bottom of the flash-head handle. Depending on the size of the camera, the second screw may be used in any of the four remaining holes to secure the bracket to the camera. The screw provided is standard for American cameras, but, if the camera threads will not accept the screw, adapters are available from photo dealers.

The synchronizing contacts of the camera must be connected to the flash head by a synchronizing cable. No cable is supplied by the manufacturer due to a lack of standardization of camera connections, but photo dealers can supply synchronizing cables to fit the particular camera in use.

Since the MEGALUME 3 responds instantly to the closing of the synchronizing contacts, the camera shutter must be completely open when these contacts close. This is usually designated as "X" synchronization. Expendable flash-bulbs vary in timing, but in principle, the camera synchronizing contacts must close prior to the shutter opening to allow the metal foil in the bulb to reach the maximum point of incandescence coincident with the wide open shutter position. "Medium peak" flash-bulbs, the most commonly used, have a delay of approximately 20 milliseconds; this is known as "M" synchronization. Other expendable flash-bulbs have various delays, but the above principle applies in all cases. For successful use of the MEGALUME 3, the camera *MUST* have "X" synchronization.

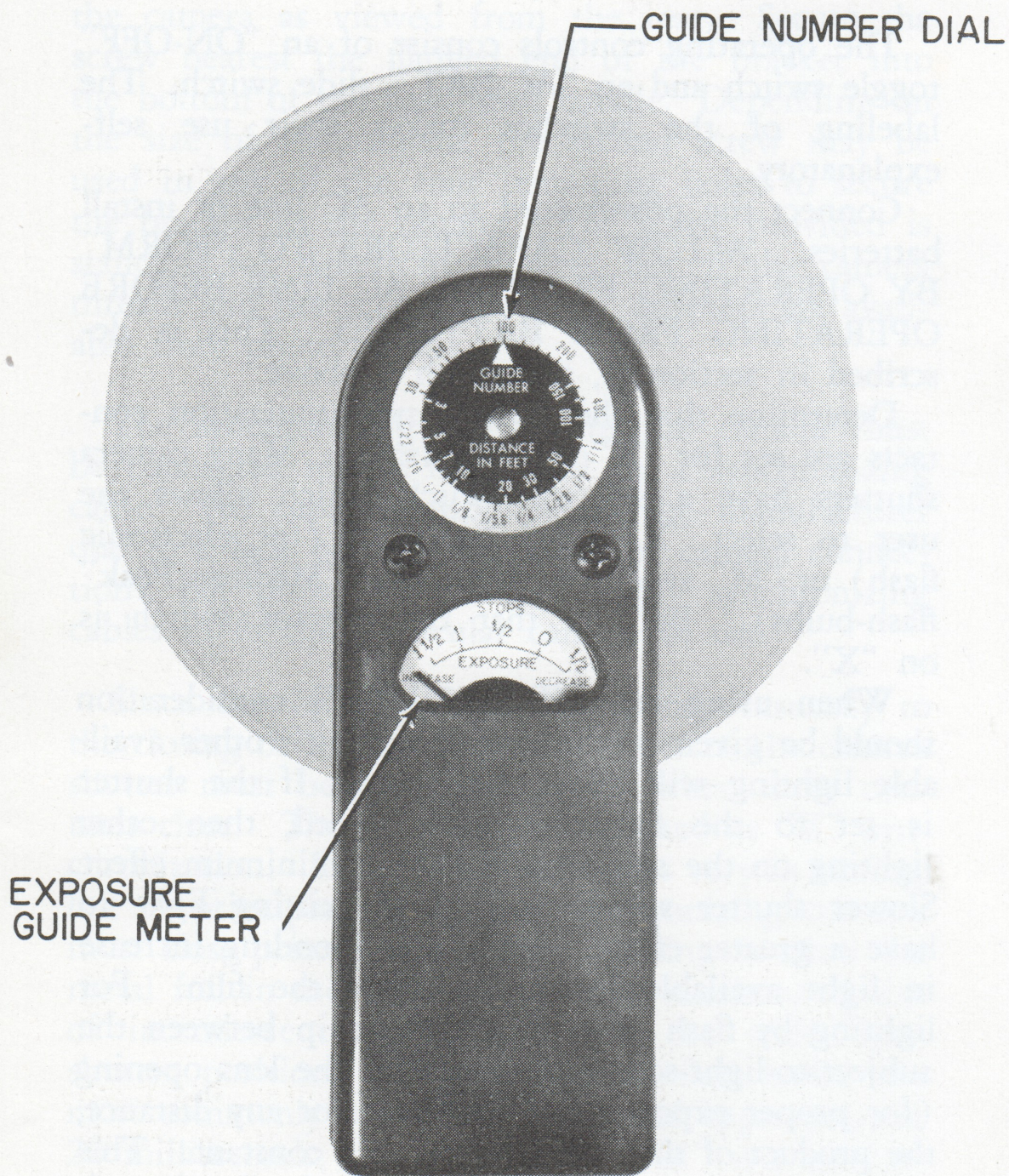
### III. OPERATION

The operating controls consist of an "ON-OFF" toggle switch and an "AC-BAT." slide switch. The labeling of the switches makes their use self-explanatory.

Connect the power cord to an AC line or install batteries. **ALLOW CAPACITORS TO "FORM" BY OPERATING FROM AN AC LINE BEFORE OPERATING FROM BATTERIES.** This is described in section II, paragraph 2 above.

Determine that the camera synchronization contacts are set for "X" synchronization. Many camera shutters have a selector switch which allows the user to select "X" synchronization (for electronic flash) or "M" synchronization (for "Medium Peak" flash-bulbs). Be sure that the selector switch is on "X".

When using the MEGALUME 3, consideration should be given to the extent to which other available lighting will affect the picture. If the shutter is set to the fastest possible speed, then other lighting on the subject will have a minimum effect. Slower shutter speeds will cause existing light to have a greater effect, with a corresponding increase in light available for exposure of the film. For lighting by flash only, the relationship between the subject-to-light-source distance and the lens opening (for proper exposure) is such that for any distance, the product of these two factors is a constant. This constant is termed the "Guide Number". By adjusting the lens opening to correspond to the distance from the subject, according to the guide number, consistent exposure can be obtained.



**Figure 2.—Rear of Flash-Head, showing guide number dial and exposure guide meter**

Factors affecting the guide number are:

- (1) The speed of the film used.
- (2) The intensity of the light source.
- (3) Efficiency of the camera's lens system.
- (4) Exposure preference of the user.

The following tables are included as a guide to the operation of the equipment with various film speeds. Due to variations in lens efficiencies and the personal preferences of the user, the guide numbers should be regarded as a starting point from which the user can develop his own guide numbers to suit his particular needs.

While color film must be exposed accurately for good results, the wide latitude of black and white film allows considerable departure from optimum exposure time without appreciable deterioration of picture quality. Guide numbers for color film and for black and white film are listed separately because film manufacturers recommend less exposure for black and white film than for color film with the same exposure index.

The use of the guide number dial (see figure 2) on the rear of the flash-head may be explained as follows:

- (1) Using the daylight exposure index stated on the film, select the corresponding guide number from the Exposure Table.
- (2) After the proper guide number has been selected, rotate the red disk until the arrow points to the guide number, which will be found on the upper half of the dial.
- (3) The distance in feet from the light source to the subject, on the lower half of the red disk,

will be adjacent to an F/stop number which represents the proper lens opening for the camera.

## EXPOSURE TABLE

<i>Daylight Exposure Index</i>	<i>Color Film Guide Number</i>	<i>Black &amp; White Films Guide Numbers</i>
10	30	35
12	35	40
16	40	45
20	45	50
25	50	60
32	55	65
40	60	70
50	65	80
64	75	90
80	85	100
100	95	110
125	110	125
160	120	140
200	130	160
250	150	180
320	170	200
400	190	230
500	210	250
650	240	290
800	270	320
1000	300	360

*Note: It is suggested that the space below be used to note the guide numbers of your most commonly used films.*

FILM USED

GUIDE NUMBER


The major cause of inconsistent exposure with electronic flash equipment operating from dry batteries is the reduction in light output as the batteries are used. Ordinarily this necessitates either discarding batteries long before the end of their useful life, or accepting the variation in light output on a guesswork basis. The MEGALUME 3 avoids this difficulty by the incorporation of a meter so calibrated that the user can compensate for low batteries by increasing the camera lens opening. The meter is calibrated in terms of camera f/stop adjustment necessary to cause the same exposure that would be obtained at "0" while still using the same guide number. For example if at the distance the picture is to be taken, the guide number calls for a lens opening of f/11 and the meter directs an increase in exposure of 1 f/stop, then proper exposure will be obtained at a lens opening of f/8. The meter thus tells how to vary the exposure for best results.

When operated at temperatures below freezing, the light output of the Megalume will be reduced. This loss in output will NOT be indicated on the meter. This characteristic is common to any electronic flash unit using electrolytic capacitors.

## IV USER SERVICING

It is not recommended that the user make any except minor repairs and replacements on the unit unless he has considerable experience in electronic circuitry and is fully conversant with the safety precautions necessary when the unit is out of its case.

The only work that we recommend being done by the average user is the following:

(1) Battery Replacement:

(A) "D" cells—The following are recommended:

Bright Star #10P

Burgess #220

Eveready #850

General #934

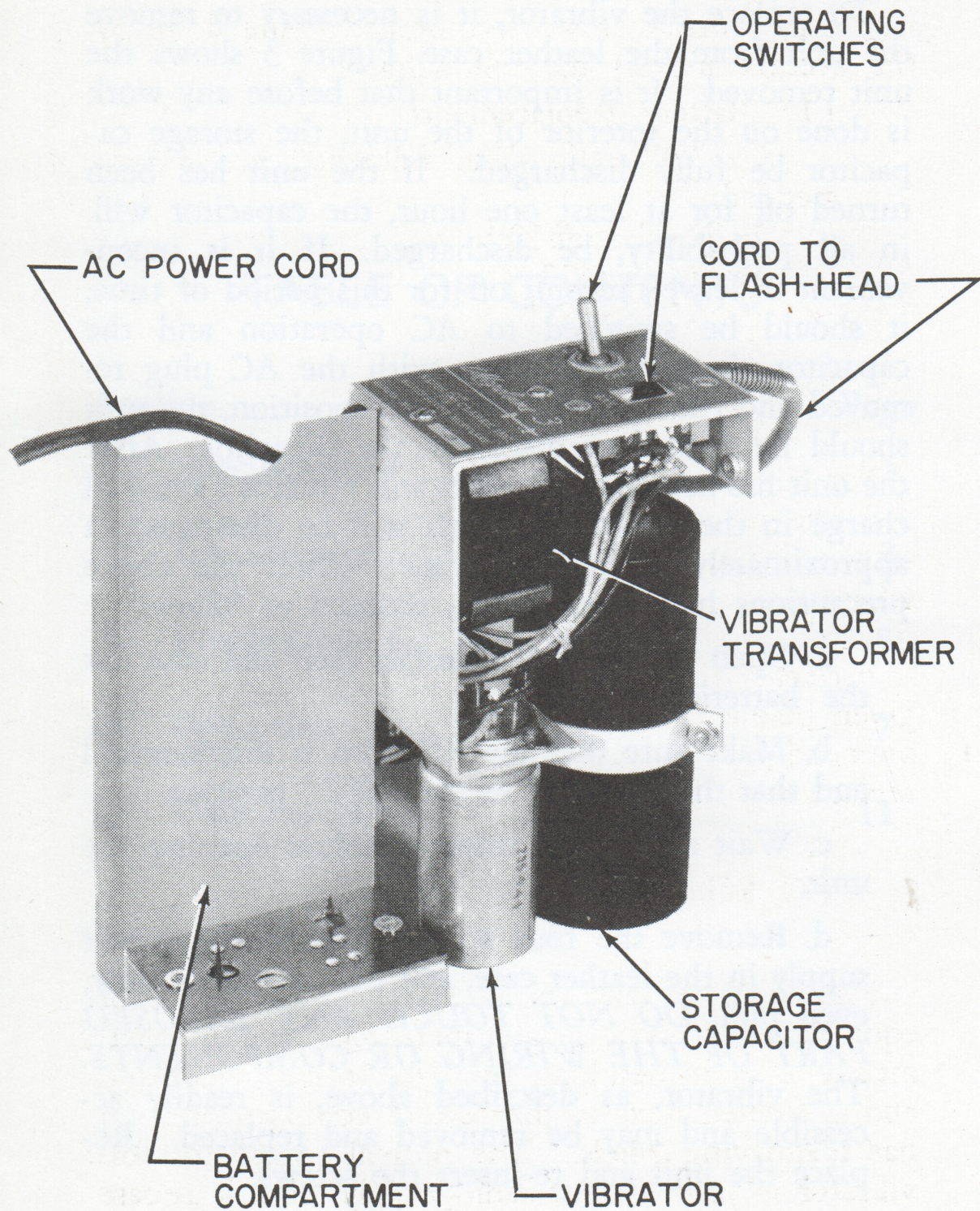
(B) High Voltage Battery:

Eveready #497 or equal

For other than battery replacement we recommend that the user take the unit to his camera dealer's service department, or return the unit to the factory, where prompt and economical service can be performed. If, as an emergency measure, the user finds it necessary to replace the vibrator, instructions are given below for this operation. However, we recommend that the user let his dealer or service man replace the vibrator whenever possible.

## (2) REPLACEMENT OF THE VIBRATOR

The vibrator used is a Mallory type 1100 or equivalent. It is a bright metal cylinder approximately 2-1/2 inches long by 1-1/4 inch in diameter, and is located next to the battery compartment. It has identifying labels. The normal source for this vibrator is your nearest radio supply store. In case it cannot be readily obtained, an American Television and Radio Company vibrator, part #350, is an acceptable substitute.



**Figure 3.—Megalume 3 with carrying case removed, showing component parts**

To replace the vibrator, it is necessary to remove the unit from the leather case. Figure 3 shows the unit removed. It is important that before any work is done on the interior of the unit, the storage capacitor be fully discharged. If the unit has been turned off for at least one hour, the capacitor will, in all probability, be discharged. If it is inconvenient to leave the unit off for this period of time, it should be switched to AC operation and the capacitor charged; and then, with the AC plug removed and the switch in the OFF position, the unit should be flashed to discharge the capacitor. After the unit has been flashed, there still remains a residual charge in the capacitor, which will be dissipated in approximately 15 minutes time. After the above precautions have been taken, proceed as follows:

a. Open the lid of the leather case, and take out the batteries.

b. Make sure that the AC cord is disconnected and that the switch is in the "OFF" position.

c. Wait at least 10 minutes before opening the unit.

d. Remove the four screws holding the power supply in the leather case, and lift up with a slow, even pull. *DO NOT TOUCH ANY EXPOSED PART OF THE WIRING OR COMPONENTS.* The vibrator, as described above, is readily accessible and may be removed and replaced. Replace the unit and re-insert the screws.







Complete, less battery

Just Price  
\$ 69.95

I don't recommend this.